

Application No. 10/589,122
Response dated November 16, 2009
Reply to office action dated July 14, 2009

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

1. (Currently Amended) A handling device for use with a medical injector having a cylindrical body provided with a boss at the forward end thereof supporting a forwardly-projecting needle furnished with a substantially rigid protective sheath, which device comprises:

- a carrier having an outer cylindrical wall and co-axial therewith an inner tube which is a close sliding fit over the protective sheath of a needle;

- a cylindrical sleeve slidably mounted within the outer cylindrical wall of the carrier, ~~the~~a rear end of the sleeve being adapted to receive the cylindrical body of the injector;

- a bushing slidably located within the cylindrical sleeve, which bushing is retained within the sleeve and defines a bore for receiving the boss at the forward end of the injector body;

- spring means urging the bushing towards the rear end of the sleeve; and

- a plug ~~slidably~~ mounted on the carrier for sliding movement between an inactive position where the plug is located substantially wholly within the carrier and an indicating position where the plug projects from the carrier, the plug having a wall disposed for engagement by and projectable from the forward end thereof, the a forward end of the protective sheath of a needle to effect said sliding movement ~~received injector engaging the plug;~~

whereby in use the device is fitted to the forward end of an injector by receiving the injector cylindrical body in the sleeve and ~~the said~~ boss of the injector in the bore of the bushing, the protective sheath then coupling to the inner tube of the carrier and the forward end of the sheath engaging said wall of the plug so

pushing the plug forwardly with respect to the carrier to project therefrom, and on subsequent withdrawal of the carrier from the injector, the bushing and sleeve remain on the injector and the sheath remains within the carrier with the plug projecting from the forward end thereof in its indicating position.

2. (Original) A handling device as claimed in claim 1, wherein the carrier has an inner cylindrical wall connected at the forward end of the carrier to the outer cylindrical wall, the inner tube being connected to the rear end of the inner cylindrical wall.

3. (Original) A handling device as claimed in claim 2, wherein the cylindrical sleeve is slidable within the annular space between the inner and outer cylindrical walls of the carrier.

4. (Previously Presented) A handling device as claimed in claim 2, wherein the plug is slidably supported within the inner cylindrical wall of the carrier.

5. (Original) A handling device as claimed in claim 4, wherein the plug is a sufficient light frictional fit within said cylindrical wall to restrain movement of the plug with respect to the carrier under the influence of gravity.

6. (Previously Presented) A handling device as claimed in claim 4, wherein the length of the plug is such that the plug is substantially wholly accommodated within the carrier prior to use of the device with an injector.

7. (Previously Presented) A handling device as claimed in claim 4, wherein the plug and the forward end of the inner cylindrical wall co-operate to limit forward movement of the plug, out of the carrier.

8. (Previously Presented) A handling device as claimed in claim 1, wherein the plug has an enlarged head at its forward end which lies externally of the carrier.

9. (Previously Presented) A handling device as claimed in claim 1, wherein the sleeve has a rear end which is internally profiled to permit the bushing to be pushed into said rear end of the sleeve thereafter to retain the bushing within the sleeve.

10. (Previously Presented) A handling device as claimed in claim 9, wherein the rear end of the sleeve has an internal profile which includes one or more radially-inwardly directed nibs with which the bushing is engageable.

11. (Previously Presented) A handling device as claimed in claim 1, wherein the bushing includes an in-turned lip at the forward end thereof, which lip is engageable by the forward end of the injector boss to define an engaged relative position of the injector and the bushing.

12. (Previously Presented) A handling device as claimed in claim 11, wherein the carrier has an inner cylindrical wall connected at the forward end of the carrier to the outer cylindrical wall, the inner tube being connected to the rear end of the inner cylindrical wall, and said lip of the bushing engages the rear end of the inner tube when the cylindrical sleeve is fully within the outer cylindrical wall of the carrier.

13. (Previously Presented) A handling device as claimed in claim 1, wherein the plug has a rearwardly-facing socket within which the forward end of the needle sheath of an injector is receivable.

14. (Previously Presented) A handling device as claimed in claim 1, wherein the spring means comprises a helical compression spring located within the sleeve and acting between the forward end of the sleeve and the bushing.

15. (Previously Presented) A handling device as claimed in claim 1, wherein the boss at the forward end of the cylindrical body is externally screw-threaded, for use with a needle having a hub with an internally-threaded socket co-operable with the threads of the boss.

16. (Previously Presented) A handling device as claimed in claim 1, wherein the carrier has an inner cylindrical wall connected at the forward end of the carrier to the outer cylindrical wall, the inner tube being connected to the rear end of the inner cylindrical wall, and the rear end of the plug locates in an annular space between the inner cylindrical wall of the carrier and the inner tube, when the plug is fully within the carrier.

17. (Previously Presented) A handling device as claimed in claim 1, wherein the plug is of a contrasting colour to that of the carrier.

18. (Previously Presented) A handling device as claimed in claim 1, wherein the sleeve defines an elongate internal cavity of a sufficient length to accommodate the body of a pen-style injector having a plunger and intended for self administration, leaving only the plunger of the injector accessible.

19. (Previously Presented) The combination of a handling device as claimed in claim 1 and a medical injector having a cylindrical body provided with a boss at the forward end thereof for supporting a forwardly-projecting needle furnished with a protective sheath, wherein the boss is receivable in the bore of the bushing, the sleeve is slidable rearwardly over the cylindrical body of the injector, and the sheath is connectable to the inner tube of the carrier.

20. (Currently Amended) A method of using a handling device as claimed in claim 1 with a medical injector having a cylindrical body provided with an externally threaded boss at the forward end thereof for supporting a needle having an internally threaded hub engageable with the threads of the boss and a substantially rigid needle sheath surrounding and protecting the needle, comprising the steps of:

- threading the hub of a needle on to the boss of the injector;
- pushing the carrier on to the forward end of the injector so that the injector body is slidably received in the cylindrical sleeve, the boss carrying the needle hub is received in the bore of the bushing, the sheath is coupled to the inner tube, and the sheath engages the said wall in the plug and pushes to push the plug forwardly to its said indicating position, projecting from the carrier;
- pulling the carrier away from the cylindrical body of the injector with the sheath retained within the inner tube, the sleeve remaining on the injector body and the bushing remaining on the needle hub and boss, with the sleeve being urged forwardly by the spring to protect the needle;

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and following the performance of an injection, during which the sleeve slides rearwardly over the injector body against the action of the spring to expose the needle as required:

- pushing the carrier once more on to the forward end of the injector so receiving the sleeve into the carrier and refitting the protective sheath on to the needle;
- rotating the carrier to unthread the needle hub from the boss and freeing the carrier from the injector body with the needle and sheath carried therewithin; and
- pressing the projecting plug back into the carrier, so driving the sheathed needle out of the handling device.

21. (Currently Amended) A handling device for use with a medical injector having a cylindrical body provided with a boss at the forward end thereof supporting a forwardly-projecting needle furnished with a substantially rigid protective sheath, which device comprises:

- a carrier having an outer cylindrical wall and co-axial therewith an inner tube which is a close sliding fit over ~~the~~ said substantially rigid protective sheath of a the needle;
 - a cylindrical sleeve slidably mounted within the outer cylindrical wall of the carrier, the rear end of the sleeve being adapted to receive the cylindrical body of the injector;
 - a bushing slidably located within the cylindrical sleeve, which bushing is retained within the sleeve and defines a bore for receiving the boss at the forward end of the injector body; and
 - spring means urging the bushing towards the rear end of the sleeve;
- whereby in use the device is fitted to the forward end of an injector by receiving the injector cylindrical body in the sleeve and the boss in the bore of the bushing, the sheath then coupling to the inner tube of the carrier to be gripped

thereby, and on subsequent withdrawal of the carrier from the injector the bushing and sleeve remain on the injector and the sheath remains within the carrier and so is withdrawn from the needle.

22. (Previously Presented) A handling device as claimed in claim 21, wherein the carrier has an inner cylindrical wall connected at the forward end of the carrier to the outer cylindrical wall, the inner tube being connected to the rear end of the inner cylindrical wall.

23. (Previously Presented) A handling device as claimed in claim 22, wherein the cylindrical sleeve is slidable within the annular space between the inner and outer cylindrical walls of the carrier.

24. (Previously Presented) A handling device as claimed in claim 21, wherein the sleeve has a rear end which is internally profiled to permit the bushing to be pushed into said rear end of the sleeve thereafter to retain the bushing within the sleeve.

25. (Previously Presented) A handling device as claimed in claim 24, wherein the rear end of the sleeve has an internal profile which includes one or more radially-inwardly directed nibs with which the bushing is engageable.

26. (Previously Presented) A handling device as claimed in claim 21, wherein the bushing includes an in-turned lip at the forward end thereof, which lip is engageable by the forward end of the injector boss to define an engaged relative position of the injector and the bushing.

27. (Previously Presented) A handling device as claimed in claim 26, wherein the carrier has an inner cylindrical wall connected at the forward end of the carrier to the outer cylindrical wall, the inner tube is connected to the rear end of the inner cylindrical wall, and said lip of the bushing engages the rear end of the inner tube when the cylindrical sleeve is fully within the outer cylindrical wall of the carrier.

28. (Previously Presented) A handling device as claimed in claim 21, wherein the spring means comprises a helical compression spring located within the sleeve and acting between the forward end of the sleeve and the bushing.

29. (Previously Presented) A handling device as claimed in claim 21, wherein the boss at the forward end of the cylindrical body is externally screw-threaded, for use with a needle having a hub with an internally-threaded socket co-operable with the threads of the boss.

30. (Previously Presented) A handling device as claimed in claim 21, wherein the sleeve defines an elongate internal cavity of a sufficient length to accommodate the body of a pen-style injector having a plunger and intended for self administration, leaving only the plunger of the injector accessible.

31. (Currently Amended) The combination of a handling device as claimed in claim 21 and a medical injector having a cylindrical body provided with a boss at the forward end thereof for supporting a forwardly-projecting needle furnished with a substantially rigid protective a sheath, wherein on fitting the handling device to the medical injector having a needle projecting forwardly therefrom, the boss is ~~receivable~~ received in the bore of the bushing, the sleeve ~~is slidable~~ slides rearwardly over the cylindrical body of the injector, and the sheath ~~is connectable~~ couples to the inner tube of the carrier.

32. (Currently Amended) A method of using a handling device as claimed in claim 21 with a medical injector having a cylindrical body provided with an externally threaded boss at the forward end thereof for supporting a needle having an internally threaded hub engageable with the threads of the boss and a substantially rigid needle sheath surrounding and protecting the needle, comprising the steps of:

- threading the hub of a needle on to the boss of the injector;
- pushing the carrier of the handling device on to the forward end of the injector so that the injector body is slidably received in the cylindrical sleeve, the

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boss carrying the needle hub is received in the bore of the bushing, and the substantially rigid protective sheath is coupled to the inner tube;

– pulling the carrier away from the cylindrical body of the injector with ~~the~~ said protective sheath retained within the inner tube, the sleeve remaining on the injector body and the bushing remaining on the needle hub and boss, with the sleeve being urged forwardly by the spring to protect the needle;
and following the performance of an injection, during which the sleeve slides rearwardly over the injector body against the action of the spring to expose the needle as required:

– pushing the carrier once more on to the forward end of the injector so receiving the sleeve into the carrier and refitting ~~the~~ said protective sheath on to the needle; and

– rotating the carrier to unthread the needle hub from the boss and freeing the carrier from the injector body with the needle and sheath carried therewithin, for disposal.